WIRELESS FACILITY ON CITY OWNED INFRASTRUCTURE

STRUCTURAL DESIGN CHECK SHEET

Effective 08/17/2020

PBOT
PORTLAND BUREAU OF TRANSPORTATION

To be completed ONLY by a duly authorized representative of a wirelss carrier granted authority by the City of Portland under an existing, valid Right-of-Way Agreement to place wireless communication facilities in City streets. This design check sheet must be submitted with any application to use City-owned assets for new or additional wireless communication attachements. Failure to fully complete the check sheet may result in application rejection or denial.

All structural design, detailing, and construction practices shall be in conformance with the most currently published version of PBOT's Structural Design Criteria for Vertical Infrastructure.

Applicant **Required**		*COP Staff* **Provided**
Primary Documents		
☐	DETAILED PLANS - Stamped and signed by Professional Engineer currently registered in the State of Oregon (required following acceptance of application)	☐
☐	POLE, MAST ARM, FOUNDATION, ANCHORAGE STRUCTURAL CALCULATIONS - Stamped and signed by Professional Engineer currently registered in the State of Oregon	☐
☐	GEOTECHNICAL ENGINEEING REPORT - Stamped by Professional Engineer or Geologist currently registered in the State of Oregon (Unless using PBOT Standard Drawings)	☐
☐	EXISTING STRUCTURE ASSESSMENT - Stamped and signed by Professional Engineer currently registered in the State of Oregon	☐
☐	PROJECT SPECIAL PROVISIONS - Stamped and signed by Professional Engineer currently registered in the State of Oregon	☐
Detailed Plans		
☐	Site map included with Latitude and Longitude of each proposed pole location	☐
☐	Offset dimension from proposed pole to existing pole, if the pole is a replacement	☐
☐	Existing building limits above and below ground	☐
☐	Existing infrastructure features, i.e. poles, walls, fences, bus shelters, planters, garbage bins, awnings, etc.	☐
☐	Existing trees, including spread of foliage	☐
☐	Existing and proposed overhead utilities, including temporary relocation locations and heights	☐
☐	Existing and proposed underground utilities, including temporary relocations locations and depths	☐
☐	Existing and proposed sidewalk limits	☐
☐	Existing and proposed curb and curb ramp limits	☐
☐	Right-of-way boundaries and easements	☐
☐	North arrow	☐
☐	Drawing scale	☐
☐	Proposed light or signal pole location, including footing elevations	☐
☐	Dimensioned offset of proposed street light or signal pole and foundation from face of curb, building face, and other building structural elements such as basement walls.	☐
☐	Show all weld symbols, special weld details, special inspection requirements, structure dimensions to be field verified, structure layout, member sizes, and any non-PBOT-standard structural detailing.	☐
☐	All proposed relevant dimensions of pole attachments including weight, location, elevation, size of such as signs, luminaires, signal heads, antenna, service cabinets, banners, etc.	☐

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Detailed Plans (Continued)		
☐	Material specifications for all structural components including pole, bolts, welds, anchors, concrete, rebar, etc.	☐
☐	All design criteria, including, but not limited to the following:	☐
	Appropriate design wind speed of 100 mph, with a Gust factor of 1.14 and a wind importance factor (Ir) of 1.00	
	Fatigue category	
	Recurrence interval	
	Future loading conditions	
☐	Equipment orientation diagram for each pole	☐
☐	Reference to 2010 City of Portland Standard Construction Specifications as basis of construction	☐
☐	The foundation reinforcement is completely detailed and is site specific.	☐
☐	Number of anchor bolts meets or exceeds minimum specified by AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, Sixth Edition (2013)	☐
Equipment Details		
☐	Labeled with identifiable names that match the calculations	☐
☐	Details for all proposed equipment and appurtenances shall be provided. Details should include size, fully-loaded weight, anchorages, effective projected area, and proposed mounting location.	☐
☐	Connection details for all proposed pieces of equipment shall be provided and completely detailed.	☐
Base Plate Details		
☐	Pole base plate size, thickness, material, bolt circle, bolt hole size and location should be detailed. Weld size between pole and base plate shall be shown.	☐
Anchorage Details		
☐	Anchor bolt number, length, size, embedment depth, projected height above foundation, projected height above base plate, bolt circle, finish, and material shall be clearly detailed.	☐
Foundation Details		
☐	Foundations shall be a minimum of 3’-0” in diameter for street lights, and 3'-6" for signal poles	☐
☐	Concrete specifications shall be provided, and shall have a minimum compressive strength of 4,000 psi at 28 days	☐
☐	Foundation reinforcement shall be detailed with bar locations, shapes, sizes, spacing, and covers	☐
☐	Foundation elevations referenced from City of Portland datum. For more information: https://www.portlandoregon.gov/tRANSPORTATION/article/70676	☐
☐	Foundations contain a pillar 30" tall, above finished grade, if no curb is present	☐
Pole Shop Drawings		
☐	Signed and stamped by a Professional Engineer registered in the State of Oregon. Pole shop drawings shall include details for all pole, connection, mast arm, and anchorage components. All materials, sizes, and finishes of bolts and welds shall be detailed.	☐

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Structural Calculations		
☐	Calculation book cover sheet	☐
☐	Table of contents	☐
☐	Designed per AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, Sixth Edition (2013)	☐
☐	Complete design criteria including all design codes used, live load assumptions, seismic values, wind speeds, etc.	☐
☐	Pole loading calculations to show the proposed equipment falls within the maximum allowable Zone loads as shown in Standard Drawings P-667 through P-669	☐
☐	Final design calculations for the following elements, at a minimum: Mast arm and luminaire arm Mast arm and luminaire arm connection weld Mast arm and luminaire arm connection bolts Mast arm and luminaire arm connection plates Vertical post Connections for all fully-loaded weight of equipment and appurtenances Vertical post base weld Base plate Anchor bolts Foundation concrete and rebar Foundation diameter and embedment depth, unless provided in geotech report Vaulted basements, sidewalks, or building walls	☐
☐	References cited for all numbers/values/assumptions/criteria taken from other calculations or sources, including design codes and standard drawings and details	☐
☐	Completed header for all sheets	☐
☐	Load summary table stating the calculated loads vs the allowable loads	☐
☐	All sheets shall be numbered	☐
☐	Calculations shall be clearly separated with divider pages for each primary element of the design, i.e. pole, mast arm, anchorage, foundation, etc.	☐
☐	All computer output shall include accompanying Engineer's narrative and interpretation of the results	☐
☐	Input parameters into computer models shall be clearly defined and presented	☐
☐	The calculations show clearly that all structural elements, connections, anchorages, and features are at a D/C ratio of less than 100%.	☐
Geotechnical Engineering Report (Not required if using PBOT Standard Drawing P-669)		
☐	Report cover sheet	☐
☐	Table of contents	☐
☐	Boring logs	☐
☐	Recommended soil parameters	☐
☐	Recommended foundation diameter and embedment depth, unless provided in calculation section	☐
☐	Recommended construction and temporary support requirements	☐
☐	Recommended special provision requirements	☐
☐	L-Pile analysis	☐

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Existing Structure Assessment		
☐	Report cover sheet	☐
☐	Table of contents	☐
☐	List of possible affected structures, or statement of no structures affected	☐
☐	Results of site visit and records search related to vaulted basements, sidewalks or existing building walls	☐
☐	Determination of possible or anticipated impacts to vaulted basements, sidewalks or existing building walls	☐
☐	Assessment or analysis of condition and load carrying capacity of existing vaulted basements, sidewalks or existing building walls	☐
☐	Recommended design criteria, and any recommended action necessary to preserve and protect existing structures	☐
Special Provisions		
☐	Signed and stamped by a Professional Engineer registered in the State of Oregon	☐
☐	Based on 2010 City of Portland Standard Construction Specifications	☐
☐	All applicable Sections and Subsections included	☐
☐	Shall incorporate recommendations provided by project Geotechnical Engineer and Structural Engineer	☐